REMARKS

General remarks.

Claims 1-14 are all the claims pending in the application. By this Amendment, applicant amends claims 1 and 12-14. The drawings are objected to for some informalities in labeling. Applicant files herewith a Proposed Drawing Correction to take care of these informalities. Applicant respectfully requests the examiner to withdraw the objection to the drawings in view of this proposed drawing correction being filed herewith.

Claim Rejection under 102(b).

The Examiner rejected claims 1-6, 10 and 12-14 under 35 U.S.C. § 102(b) as being anticipated by Maenaka et al. (US 5,552,827) (hereinafter "Maenaka"). Applicant respectfully traverses this rejection and respectfully requests the Examiner to reconsider this rejection in view of the comments which follow.

Claims 1-10

Applicant respectfully traverses this rejection, first with respect to claims 1-10. Of these claims, only claim 1 is independent. Claim 1, as now amended, requires:

> an image processing unit performing image processing on pixels within a predetermined range having said detected color blur pixel as a reference pixel, so as to reduce a color blur,
>
> an image data ... an output from an input device, which generates the image data by obtaining image data by a single-plate solid image pickup device...

For the sake of linguistic convenience only, the foregoing limitations will be referred to, respectively, as the "image processing unit" requirement and the "image data from an input device" requirement.

The Examiner asserts that claim 1 is directed to an imaging processing apparatus and is anticipated by the teachings of Maenaka. The Examiner asserts that image processing unit and imaging data are identical to Maenaka's camera system 10 and pixels, respectively (see page 3 of the office action). Applicant respectfully disagrees with the Examiner. Applicant has carefully studied Maenaka's discussion of camera system 10 performing image processing and generating pixels, and respectfully submits that the teachings of this reference do not fulfill the image processing unit requirement for the image data from an input device requirement.

Maenaka teaches a technique, performed in the camera, to reduce a color blur pixel by using correlation calculations. Specifically, the image processing technique performs interpolation calculations on all pixels surrounding the specific pixel, which is three color signals of a center pixel (Figs. 8A-B; see col. 6, lines 29 to 39). Thus, average value of the 3 signals are calculated by interpolation (see col. 6, lines 62-68). Using these interpolated numbers, the horizontal and vertical weights (Kh and Kv) are calculated. Finally, by considering the horizontal and vertical correlation of the specific pixel with respect to pixels around the specific pixel, it is possible to prevent the false color signals from being produced (see col. 4, lines 44 to 46; col. 9, lines 1 to 32).

However, Maenaka teaches that a specific pixel is 3 color signals of a center pixel (see col. 6, lines 35 to 40). Maenaka chooses a center signal and then performs correlation with the neighboring signals for all three colors; then it extracts vertical and horizontal weighing coefficients. In short, Maenaka teaches taking a center pixel and not a detected color blur pixel and comparing it to its neighbors. It fails to teach or suggest at a first step of detecting color blur pixels and then, doing image processing only on the detected color blur pixel and pixels in the predetermined range. Maenaka therefore fails to teach or suggest the image processing unit as set forth in independent claim 1.

In addition, Maenaka teaches a technique for preventing the production of false color signals, used in a camera (see col. 2, lines 1 to 3). Specifically, Maenaka teaches a video camera which utilizes a solid-state image sensing device having a large number of pixels arranged in a

matrix fashion and a plurality of color filters arranged in a mosaic fashion (see col. 1, lines 5 to 10). However, Maenaka does not teach or suggest performing image processing on data from another input device, for example, data from a digital still camera or a scanner. In short, Maenaka teaches processing of the camera-generated pixels in the camera, that is, both the generating and the processing of the pixels are performed in the video camera and not in different devices. Maenaka fails to teach image data, which is an output from an input device. Thus, Maenaka fails to meet the requirement for image data from an input device, as set forth in independent claim 1.

Therefore, an image processing apparatus in claim 1 is not taught by Maenaka, which lacks the image processing unit and image data from input device recitations of claim 1. Applicant therefore respectfully submits that this reference thus cannot be said to anticipate the subject matter of the claim within the meaning of 35 USC § 102. Furthermore, this reference does not contain any teaching or suggestion that would have encouraged the artisan of ordinary skill to have modified any of the embodiments in this reference so as to achieve the subject matter of independent claim 1. For all of these reasons, applicant respectfully submits that independent claim 1 patentably distinguishes over Maenaka. Applicant therefore respectfully requests the Examiner to withdraw this rejection of independent claim 1, and also its rejected dependent claims.

Applicant points out, moreover, that Maenaka teaches a technique for removing a color blur pixel using correlation calculation that is the technique prevents the false color signal from being produced (see col. 2, lines 41 to 44; col. 9, lines 25 to 32). However, Maenaka teaches removing and not replacing a color blur pixel as set forth in claim 10, and through a correlation calculations and not through smoothing process as set forth in claim 6. In short, Maenaka fails to teach or suggest replacing the color difference components with a central value of color difference components as set forth in claim 6 and using a smoothing process for the color difference components as set forth in claim 6.

Claim 12

Applicant respectfully traverses this rejection with respect to claim 12, as now amended. Claim 12 recites:

> a color-blur reduction processing circuit reading data of pixels within a predetermined range having the pixel of interest, detected as the color blur pixel, as a reference pixel, then performing calculation to reduce a color blur,…
>
> image data consisting of dot-matrixed pixels, output from an input device which generates the image data ….

These recitations are similar to the recitations of the image processing unit and image data from input device recitations in claim 1. Since claim 12 contains features, namely the image processing unit requirement and the image data from input device requirement, that are similar to the features argued above with respect to claim 1, those arguments are respectfully submitted to apply with equal force here.

For all of these reasons, applicant respectfully submits that independent claim 12 patentably distinguishes over Maenaka. Applicant thus respectfully requests the Examiner to withdraw this rejection of independent claim 12.

Claim 13

Applicant respectfully traverses this rejection with respect to claim 13, as now amended. Claim 13 requires:

> performing image processing on pixels within a predetermined range having said color blur pixel as a reference pixel so as to reduce a color blur.
>
> image data consisting of dot-matrixed pixels, output from an input device which generates the image data ….

These recitations are similar to the recitations of the image processing unit and image data from input device recitations in claim 1. Since claim 13 contains features, namely image processing unit and image data from input device, that are similar to the features argued above with respect to claim 1, those arguments are respectfully submitted to apply with equal force here.

For all of these reasons, Applicant respectfully submits that independent claim 13 patentably distinguishes over Maenaka. Applicant therefore respectfully requests the Examiner to withdraw this rejection of independent claim 13.

Claim 14

The same comments made above with respect to independent claims 1, 12, and 13 are respectfully submitted to apply with equal force to the rejection of claim 14 in view of the requirements in this claim for:

> performing image processing on pixels within a predetermined range having said color blur pixel as a reference pixel so as to reduce a color blur.
>
> image data consisting of dot-matrixed pixels, output from an input device which generates the image data ….

Applicant therefore respectfully requests the Examiner to withdraw also the rejection of claim 14.

Claim Rejection under 103(a).

The Examiner rejected claims 7 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Maenaka in view of Takizawa et al. (US 6,388,706B1) (hereinafter "Takizawa), and claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Maenaka in view of Kido et al. (US 5,561,724) (hereinafter "Kido"). It has already been demonstrated that Maenaka does not meet all the requirements of independent claims 1 and 12-14.

Takizawa does not compensate for these deficiencies of Maenaka, and, even taken together as a whole, the combined teachings of Maenaka and Takizawa would not have enabled an artisan of ordinary skill to have achieved the subject matter of any of these independent claims. Takizawa is relied upon only for its teaching of its image processing unit (CPU 11) that performs edge enhancement processing through interpolation process (see Figs. 1 and 2(A-B); col. 17, lines 14-17; also see office action page 8). Edge enhancement is a technique, which first, isolating the edges and not blur pixels and then amplifies these edges. Thus, Takizawa does not teach or suggest having detected blur pixels and using them for image processing as set forth in even the independent claims 1 and 12-14. Applicant therefore respectfully requests the Examiner to withdraw this rejection of dependent claims 7 and 8.

Similarly, Kido does not compensate for these deficiencies of Maenaka, and, even taken together as a whole, the combined teachings of Maenaka and Kido would not have enabled an artisan of ordinary skill to have achieved the subject matter of any of these independent claims. Kido is relied upon for its teaching of increasing and decreasing the range of the subject to be processed depending on the image size (see col. 5, lines 56-62; also see page 9 of the office action). Specifically, Kido teaches calculating the density change of a linear direction for each pixel of the image I, then the direction is minimized for each pixel and finally, a three point simple average is calculated for each pixel. Then, smoothing is performed in the direction, which minimizes density change (Fig. 1; see col. 4, lines 28 to 44). However, Kido teaches performing a smoothing process only in a certain direction and not for a predetermined range. Thus, the combined teachings of these two references, taken as a whole for what they would have meant to a person of ordinary skill, would not have led such a person to have achieved the subject matter of any of the independent claims, much less dependent claim 9. Therefore, applicant respectfully requests the Examiner to withdraw this rejection of dependent claim 9.

Allowable Subject Matter

The Examiner has rejected claim 11 for being dependent upon a rejected base claim. Applicant thanks the Examiner for indicating that claim 11 contains allowable subject matter. In

view of the arguments above, however, applicant respectfully requests the Examiner to allow claim 11 in its present form.

Conclusion and request for telephone interview.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Once Amended) An image processing apparatus performing image processing on image data consisting of dot-matrixed pixels, output from an input device which generates the image data [generated] by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in a nonuniform densities and supplementing the image data by calculation to change the nonuniform densities to uniform densities, said apparatus comprising:

a color-blur pixel detection unit detecting a color blur pixel in said image data; and

an image processing unit performing image processing on pixels within a predetermined range having said detected color blur pixel as a reference pixel, so as to reduce a color blur.

12. (Once Amended) An image processing apparatus performing image processing on image data consisting of dot-matrixed pixels, output from an input device which generates the image data [generated] by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in nonuniform densities and supplementing the image data by calculation to change the nonuniform densities to uniform densities, said apparatus comprising:

a memory in which said image data being stored;

a color-blur pixel detection circuit accessing said memory and detecting a position of a color blur pixel based on the difference between a pixel of interest and its peripheral pixel while sequentially moving the pixel of interest; and

a color-blur reduction processing circuit reading data of pixels within a predetermined range having the pixel of interest, detected as the color blur pixel, as a reference pixel, then performing calculation to reduce a color blur, and updating data of the pixel of interest stored in said memory with calculated data.

13. (Once Amended) An image processing method for performing image processing on image data consisting of dot-matrixed pixels, output from an input device which generates the image data [generated] by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in nonuniform densities and supplementing the image data by calculation to change the nonuniform densities to uniform densities, said method comprising the steps of:

detecting a color blur pixel in said image data; and

performing image processing on pixels within a predetermined range having said color blur pixel as a reference pixel so as to reduce a color blur.

14. (Once Amended) A medium containing an image processing control program for an image processing apparatus performing image processing on image data consisting of dot-matrixed pixels, output from an input device which generates the image data [generated] by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in nonuniform densities and supplementing the image data by calculation to change the nonuniform densities to uniform densities, said program executes image processing comprising:

detecting a color blur pixel in said image data; and

performing image processing on pixels within a predetermined range having said color blur pixel as a reference pixel so as to reduce a color blur.